A YEAR'S EXPERIENCE IN INTESTINAL SURGERY.[1]

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The forty patients who form the subject of my remarks have been operated on at the German Hospital and the Children's Hospital of the Mary J. Drexel Home during 1905. The operations comprise twelve simple enteroenterostomies; eleven intestinal resections, with enteroenterostomy; one enterotomy; two colostomies; seven enterorrhaphies for various forms of fecal fistula; one suture of a typhoid perforation; one reduction by manipulation of an intussusception; eight instances in which strangulating bands or adhesions were divided; and three other (atypical) operations—a total of forty-six operations on forty patients.

There were thirteen cases of intestinal carcinoma, all in the large bowel. The cecum was diseased in four cases; the sigmoid in four; the hepatic flexure of the colon in two; and the transverse colon, the splenic flexure of the colon, and the rectum in one case each. Five of these thirteen patients died—those in whom the splenic flexure and the rectum was involved, one of those with the cecum affected, and two of those in whom the sigmoid flexure was diseased. The remaining eight patients recovered from the primary operation and were relieved temporarily; but of the four successful cases in which the patients were seen sufficiently early for a radical operation to be done, two developed symptoms of recurrence about eight months later, and were again temporarily relieved by further operation; and in the case of two others, on whom a radical operation was done, sufficient time has not elapsed since the operation to permit of their being considered in this connection.

It is true of intestinal cancer, as of all other forms of malignant disease, that the surgeon seldom sees the patients early enough to be enabled to offer them hope of radical cure. Early recognition of internal cancer is one of the desiderata of surgery. Among the thirteen patients herewith reported, only six were seen early enough to render any radical operation justifiable, and in most of these, during the past, as during former years, I have been forced to content myself with doing an enteroanastomosis. When the cecum is affected, I perform a lateral anastomosis by suture between the lower ileum and the transverse colon, and occlude the ileum by a ligature just distal to the anastomosis. It is, I believe, universally recognized as better to use the transverse rather than the ascending colon for the anastomosis, as it is more movable; and as it has long been a recognized principle of intestinal surgery to unite movable to movable, and fixed to fixed parts of the alimentary canal.

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[1] Read at the Meeting of the American Surgical Association, Cleveland, Ohio, May 30 and 31 and June 1, 1906.

When the malignant growth affects the transverse colon or the upper part of the descending colon, an ileosigmoidostomy is the palliative operation to be preferred. In one patient with carcinoma of the upper rectum, or lower sigmoid, which could not be excised, I made an anastomosis by means of the Murphy button between the bowel above and that below the constriction—a sigmoidoproctostomy, as it might be called. I employed the button because of the difficulty of suturing the gut in this position, and also to shorten the time of the operation. But in general I much prefer to use sutures alone.

In regard to the etiology of carcinoma of the cecum, I desire to call attention to the increasing frequency with which primary carcinoma is found in the appendix. Recently we have resumed microscopic study of all the appendices removed at the German Hospital, and Dr. A. O. J. Kelly found two cases of primary carcinoma of the appendix among the first fifty thus examined—these in addition to the four cases found several years ago. It is interesting to speculate whether additional cases would not have been encountered had we continued the microscopic study.

In the first case of cecal carcinoma (Case I), occurring in a man aged seventy years, the cecal growth appears to have originated in a traumatism received some two months before admission. In another patient (Case II), a man aged thirty-three years, the appendix had been removed for symptoms of chronic inflammation less than two months before the resection of his cecum for carcinoma. Unfortunately we had not then resumed the routine examination of every appendix, and the malignant growth, which was then presumably in its early stages, was not recognized, although it was noted that the cecum was injected and thickened. The value of routine microscopic study of appendices removed at operation is thus conclusively demonstrated.

There was one patient (Case XIV), a woman, aged seventy years, with chronic intestinal obstruction due to a stricture of the sigmoid. In view of her age, Littre's operation was done—the formation of an artificial anus in the left iliac region. She was in the hospital over seven weeks after the operation, gradually gaining strength, but she died soon after returning to her home.

Thirteen patients were operated on for acute intestinal obstruction, exclusive of two cases of intussusception, to be referred to presently, and of cases of strangulated hernia, which are not considered at all in this series. In three cases of obstruction the bowel was gangrenous and necessitated resection. The first of these patients (Case XV), a woman, had also an irreducible right femoral hernia. If the hernia, when first seen, had been inflamed from injudicious attempts to reduce it, as was the case in a patient I operated on some years ago[1] for appendicitis, it might have complicated the diagnosis;

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[1] See "Appendicitis, its Diagnosis and Treatment," third edition, Philadelphia, 1905, p. 429.

but since there was no doubt that the obstruction was internal, laparotomy was done. A small knuckle of ileum was found obstructed by a band, and gangrenous; this portion of the bowel, therefore, was resected, and an end-to-end anastomosis of the intestine performed. The patient made a good recovery. The second patient (Case XVI), also a woman, who had had fecal vomiting for two days, and was in an extremely poor condition when operated on, had gangrene of the ileum from adhesions to the right Fallopian tube. In this patient, also, resection and circular enterorrhaphy were performed; but she died the next day, never fully rallying from the operation. The third patient (Case XVII) was a man who developed obstruction three weeks after an operation for appendicitis complicated by diffuse peritonitis. His vitality was at a low ebb as a result of the previous peritonitis, and he succumbed soon after the operation for obstruction.

In connection with resection of the small bowel there are several questions of interest which I do not think have ever been conclusively answered. One is, whether lateral anastomosis is to be preferred to circular enterorrhaphy. For many years end-to-end anastomosis seemed to be the method of choice, the use of the Murphy button rendering the operation rapid and comparatively safe. Later, when surgeons became more expert with intestinal sutures, the end-to-end method acquired a bad reputation, being productive of strictures, and the button was thought to predispose to perforation. Accordingly, the custom arose of closing the ends of the bowel and doing a lateral anastomosis. This method also has its drawbacks, the two chief to my mind being the time consumed and the interference with peristalsis caused by the longitudinal division of the circular fibers of the intestine. The unnatural deviation of the intestinal channel is also undesirable, and the blind pouches formed at each end of the apposed segments of bowel may become clogged with stagnating fecal matter. For my own part I much prefer the end-to-end method by means of sutures alone. I think that when due care is exercised, by oversewing or by knotting the suture in transit, to prevent purse-stringing or puckering of the line of sutures, no strictures need be feared. For the inexperienced or occasional operator, probably the use of the Murphy button, with end-to-end anastomosis, is preferable, but when such mechanical aid can be dispensed with, I think there can be no doubt that it is preferable to do so.

After resection of the large bowel, on the other hand, end-to-end anastomosis is distinctly inferior to lateral anastomosis, chiefly on account of the wide extraperitoneal area exposed between the layers of the mesocolon, which renders healing uncertain and fecal extravasation probable.

The other important question in connection with intestinal resection refers, not to the method of restoring the continuity of the intestinal canal, but to whether continuity shall be restored at the primary operation, or whether it is better first to make a fecal fistula. The choice certainly depends more upon the condition of the patient and upon the site of the resection than upon any preconceived theory as to the proper course in all patients. As far as the site of resection is concerned, the old rule still holds good, I think, that the higher up in the intestinal tract the lesion is situated the more strenuous should be our endeavor to prevent the formation of a fecal fistula. In spite of the excellent results obtained by certain surgeons, by the method of carefully collecting the discharge from the proximal coil and of periodically injecting this discharge into the distal loop of bowel, I think no surgeon would court the formation of a fecal fistula in the upper intestinal tract. There remains the difficulty, however, of determining with accuracy the location of the lesion in the intestine; for I think all are agreed that intestinal localization, notwithstanding the studies of Monks, is not yet an exact science. Accordingly, I always endeavor to restore the continuity of the intestinal canal at the primary operation, unless I am convinced that to do so would unnecessarily jeopardize the patient's chances of recovery. Being convinced, however, of the importance of intestinal toxemia as a lethal factor in many of these patients, I make it a point when the bowel is distended, to empty it thoroughly on the proximal side of the obstruction before concluding the operation.

In the patient above referred to (Case XVI), in whom resection of the gangrenous ileum was done, care was taken to empty the distended bowel, about two quarts of liquid feces being evacuated. In another patient (Case XXIII), a child, who was pulseless and blue at the time of the operation, which was done under local anesthesia with cocaine, Dr. H. C. Deaver resorted to the old-fashioned operation of enterotomy—Nélation's operation—opening a distended coil of intestine, after relieving the only constriction to be found, and then stitching the bowel into the wound. The intestinal canal was immediately relieved of several ounces of fluid, and the boy made a satisfactory recovery. The fecal fistula was subsequently cured by an intestinal resection with end-to-end anastomosis. In still another patient (Case XXI), in whom the obstruction was found to be due to a kink in the upper jejunum, a rectal tube was passed up through the colon, and by means of manipulation of the intestines exposed through the abdominal incision, nearly two pints of liquid was evacuated from the bowel. This boy, likewise, made a satisfactory recovery. In Case XVIII, also, recovery followed gentle manipulation of the distended bowel, urging its contents downward into the contracted intestine, after an adhesion had been released.

By such means as these it is often possible to avoid the formal institution of a fecal fistula; but I venture to think that there will always remain a certain class of apparently moribund patients in whom resort to Nélation's operation of enterotomy will be not only justifiable, but even imperative.

There were nine patients in this series with some form of fecal fistula. A patient (Case XXVIII) with enterovaginal fistula developed this condition soon after the operation of panhysterectomy for carcinoma of the uterus. She returned about a month later to have the fecal fistula repaired. This was done by opening the abdomen, releasing the ileum where it was adherent to the vagina, about six feet from the ileocecal valve, and suturing the perforation. After this operation a vesicovaginal fistula formed, but finally closed spontaneously, rather contrary to expectation, as both fistulæ were an evidence of the lack of reparative power present in this patient.

There were eight cases of external fecal fistula. In three this condition was the result of appendicitis; in two, the result of strangulated inguinal hernia; in one, the result of the operation of enterotomy; the fistula in the two remaining instances being in the sigmoid, and following some pelvic lesion in women (Cases XXIX and XXXIV). The fistulæ in the sigmoid were easily repaired by suture, and recovery in both cases was uneventful. Two of the patients with fistulæ following appendicitis recovered after removal of the appendix and suture of the defect in the cecum; but the third patient (Case XXX) was discharged unimproved after various unsuccessful efforts had been made permanently to close the fecal fistula. Two patients (Cases XXXI and XXXIII) had been operated on a year previously elsewhere for strangulated inguinal hernia. The bowel had been gangrenous and in each case a resection and an end-to-end anastomosis had been done. The fecal fistula, which resulted in these patients,.was successfully repaired by a further resection with end-to-end anastomosis. The same procedure was successful in the patient previously operated on by enterotomy.

The treatment of fecal fistula remains one of the departments of surgery which exercise in the highest degree a surgeon's judgment, patience, and skill. A fecal fistula is sometimes established by the surgeon himself, for some purpose or other. It has been urged that when this is done the two loops of bowel should be sutured side by side into the wound, so that they lie together like the barrels of a pistol, and so that the continuity of their lumen can be ultimately restored by some form of enterotome without again opening the peritoneal cavity. In my opinion this is an injudicious course to pursue. When the surgeon desires to make a fecal fistula I think it much better merely to suture the convexity of the gut to the parietal peritoneum, and then the lumen will frequently be restored spontaneously. The more healthy the bowel is the less dangerous and troublesome will a formal operation be for its repair, if any such operation be eventually required; and the only results to be derived from the use of the enterotome in these cases are more satisfactorily accomplished by a formal operation. In patients in whom the bowels are more or less extensively diseased, and in whom any formal operation is likely to be extensive and serious, it is, on the other hand, impossible to use the enterotome, since the afferent and efferent loops are not parallel, nor are the neighboring serous coats of the intestine in a condition to permit of ready adhesion by prolonged contact. It is such cases as these that necessitate extensive resections to procure normal serous surfaces which will render possible a plastic operation for the restoration of the continuity of the intestinal canal.

There were in this series two adults with intussusception of the ileocolic variety. In the first patient (Case XXXVI), operated upon by my assistant, Dr. Ross, the intussusception was irreducible, and an ileocolostomy was done. The patient, however, died two days later of stercoremia (?). The other patient (Case XXXVII) developed symptoms of intestinal obstruction during the course of typhoid fever, and the diagnosis of intussusception was made chiefly from the existence of tenesmus and from the mucus passed by the rectum. The operation was done so soon after the development of the symptoms that the intussusception was readily reduced by manipulation, and the patient made an uneventful recovery, the course of the typhoid fever seeming to be actually shortened by the operation.

Another patient (Case XXXIX), with typhoid fever, who presented symptoms of peritoneal involvement, was also promptly operated upon. In this case the œdematous, acutely inflamed appendix was removed, and a small perforation of the lower ileum, which was exuding fecal matter, was sutured. No irrigation was employed and drainage was established by means of a glass tube to the pelvis. Recovery was uneventful.

In one patient (Case XL), a man, aged thirty-six years, there was a history of ulcerative colitis lasting for two and one-half years. At the operation the lumen of the transverse colon was found to be entirely occluded by firm masses of feces, and the descending colon and the sigmoid flexure contained large amounts of scybalous feces. The walls of the colon throughout its extent were thickened and diseased. The cecum was opened, with the intention of making an artificial anus in the right iliac region; but the walls of the bowel were so extensively diseased that the safer course seemed to be to unite the healthy ileum to the comparatively normal sigmoid. An ileosigmoidostomy was therefore done, but the patient died four days later, and the autopsy showed the site of the anastomosis to be gangrenous, the sutures sloughing out. Possibly the formation of an artificial anus, as at first intended, would have further prolonged this patient's life; but the whole colon was found so irretrievably diseased postmortem that any radical cure would have been out of the question. A tabular statement of the operations is herewith appended.[1]

SUMMARY OF OPERATIONS ON FORTY PATIENTS (SEVERAL PATIENTS HAD MORE THAN ONE OPERATION).

Operation.	Total.	Recovery.	Death.	Mortality. Per cent.
Colostomy	2	1	1	50.0
Enterolysis for obstruction by adhesions, etc.	8	8	0	00.0
Enterorrhaphy for fecal fistula	7	7	0	00.0
" for typhoid perforation	1	1	0	00.0
Enterotomy for obstruction	1	1	0	00.0
Ileocolostomy	6	5	1	16.6
Ileosigmoidostomy	6	3	3	50.0
Intussusception reduced	1	1	0	00.0
Laparotomy for dynamic intestinal obstruction	1	1	0	00.0
Laparotomy to release kink causing obstruction	1	1	0	00.0
Resection of small intestine, with end-to-end anastomosis	5	3	2	40.0
Resection of cecum, including portions of ileum and ascending colon	3	2	1	33.3
Resection of hepatic flexure of colon, including portion of ascending and transverse colon, with end-to-end anastomosis of colon in one case, and a lateral anastomosis of ileum to transverse colon in the other	2	2	0	00.0
Resection of sigmoid flexure and ileosigmoidostomy	1	1	0	00.0
Sigmoidoproctostomy	1	0	1	100.0
Total operations	46	37	9	17.3
Total patients	40	31	9	22.5

ACCIDENTS FOLLOWING THORACENTESIS: PNEUMOTHORAX; SUDDEN DEATH FROM EXPLORATORY PUNCTURE.[2]

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WILSON FOX, writing as late as 1891, said that "a comparison of available published cases of pleurisy treated by paracentesis with tables of the general mortality of pleurisy shows that the mortality of the operation, as practised in serous effusions, exceeds and in some instances by an enormous proportion, the worst mortality of all hospital cases," but with earlier resort to paracentesis and improved technique, due chiefly to the recognition of the necessity of

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[1] A short abstract of the cases herewith referred to will be found in the Trans. Amer. Surg. Assoc., 1906.

[2] Read at the meeting of the Association of American Physicians, Washington, D. C., May 15 and 16, 1906.